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UNITED PARK CITY MINES COMPANY
309 KEARNS BUILDING
SALT LAKE CITY, UTAH 84101

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July 29, 1992

Mr. Mike Zimmerman, Environmental Protection Specialist
U. S. Environmental Protection Agency
Region VIII, (8HWM-ER)
999 18th Street, Suite 500
Denver, Colorado 80202-2405

Dear Mr. Zimmerman:

After discussing with our consultants your response of July 1,1992 to our comments regarding the filtering of groundwater samples, we strongly disagree with your intention to sample only for "total metals." We believe "total metals" to be an inappropriate analysis and incorrect sampling method for the Richardson Flat groundwater investigation.

EPA's contractor's assertion that "Total metals, not dissolved metals, should be tested for in groundwater" is not adequately supported on technical grounds nor does it consider the site-specific conditions of these monitoring wells. Scott Keen, EPA's contractor, states that total metals, not dissolved metals should be tested for in groundwater because of the physicochemical processes that may take place during the sampling procedure such as oxidation and precipitation of metals during the time that water is removed from the well, filtered, and placed in the sampling container and which also may occur within the well bore. There are several reasons why this assertion is faulty:

1. The oxidation and precipitation reactions indicated are, in general, quite slow and can take hours to weeks to reach equilibrium. Since the time delay between sampling and acidification is on the order of 5 minutes (for a slow filtering sample), this process barely has time to start, much less affect the metal concentrations in any analytically or statistically significant way.

2. The purpose of purging the well bore prior to sampling is to obtain fresh, representative groundwater. This is also an attempt to avoid the occurrence of these oxidation reactions to any significant degree while groundwater is still within the well bore.

3. The objective of a site investigation is to obtain data that is representative

of site conditions. Unfiltered samples for metals will not be representative for the following reasons:

The upgradient monitoring well was installed in 1985 by EPA FIT. The well was properly installed with a silica sand filter pack, appropriate screen slot size and it was then extensively developed for 6-8 hours by bailing. The result of this careful installation is that the water produced from this monitoring well is extremely clear, lacking even minute amounts of suspended solids.

The wells downgradient of the tailings impoundment, however, were not so carefully installed. They were constructed in the early 1970's and used primitive installation techniques: saw cut slots or open bottoms, pea gravel for filter pack, no formal development, etc. They have been sampled quarterly by United Park City Mines Company and are probably as developed as they can be given their construction. The result of this type of construction is that these wells have always produced water full of suspended sediment that passes into the well bore and then into the sample.

Clearly, the old downgradient wells have significantly more suspended sediment than the newer upgradient well. When subjected to the rigorous acid extraction procedure of Method 6010, this suspended sediment is mostly dissolved. The result is elevated metals concentrations due to the metals naturally occurring within the matrix of the suspended sediments. Since, the upgradient well does not have this suspended sediment, comparison of the upgradient to downgradient metals concentrations is not appropriate. For verification of the above phenomenon, examine the results of the 1985 FIT sampling in which both filtered and unfiltered samples were collected from these wells.

4. Current EPA guidance directs that for groundwater metals analyses, samples should be filtered unless they are collected from a drinking water well.

   EPA guidance directs that the following samples should be filtered:

   All groundwater metals samples (except in karst areas) used for evaluating observed release.

All groundwater metals samples (including karst areas) used for evaluating actual contamination, when compared with MCL's, etc.

Also, acknowledged in the guidance is the need to filter highly turbid samples, and the need to treat upgradient and downgradient samples in the same fashion (i.e. both filtered). Given the extreme difference in sample turbidity between these monitoring wells, representative sampling can only be achieved with sample filtering to remove excess suspended sediment.

Recent case law also requires the collection of filtered samples in this situation.

In conclusion, there is no valid technical reasons for not filtering groundwater samples for metals analysis. There are, however, many problems associated with the extreme turbidity in samples collected from downgradient wells at the site. Not filtering samples from these wells is akin to comparing apples and oranges, yet EPA will try to do just that to establish an "observed release." At the very least, filtered and unfiltered samples should be collected and data compared as recommended by EPA guidance and as done in 1985 by FIT. Total suspended sediment (TSS) analysis should also be performed in order to determine the effect of turbidity on metals concentrations.

For these reasons, we strongly recommend and will expect the groundwater samples to be filtered for this investigation.

Yours truly,

Edwin L. Osika, Jr.
Executive Vice President

ELO/rfsam

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